WEAR CHARACTERISTICS OF UHMW POLYETHYLENE BY TWIST METHOD

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ABSTRACT

Ultra high molecular weight polyethylene (UHMWPE) has been used as the bearing surface of total joint replacements for several decades. Medical grade UHMWPE remains the material of choice for the bearing surface in total joint replacement components. This polymer offers unique mechanical properties as well as biocompatibility [1]. A wear test of the twist movement is studied as a new method to estimate the in vivo wear behavior of on joints replacements. Such properties play an important role in determining the long-term success of orthopedic devices [2]. This technique is relatively simple to perform. During which a ball is pressed with a constant force and then rotated. This allows to estimate the twist moment.

Two types of ultra high molecular weight polyethylene (UHMWPE), non-irradiated (conventional) and gamma irradiated (crosslinked) are tested under dry and lubricated conditions. The lubricant used is water. The wear tests of the twist movement are performed using an adapted tribometer.

This method is used also to determine the static and dynamic friction coefficient.

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